
eHeritage Dunedin

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This poster paper describes an interactive 3D model engine, powered by a database of varied historical resources, has been deployed at the Otago Settlers Museum (to be populated and exhibited as a time-based representation of Dunedin)

The challenge

Previous work in this area has attempted to automate the production of the 3D environment. This project has taken a different approach, based largely on the realisation of the necessity of the human in the loop. This means we need a complex system that supports has several aspects:

- Archival investigation
- Curatorial and exhibition design
- Modelling
- Exhibit interaction and learning

To support these various interactions with information, the eHeritage solution can be considered a framework, or a set of solutions.

Data

Town planning maps, historical photos, paintings, journals - 160 years of Dunedin's history stored in a variety of formats, and housed in a multitude of locations. How can these disparate forms of data be brought together to illustrate the evolution of the town since its settlement?

The eHeritage Dunedin software collates data of different formats into a central database, and strives to utilise as much of possible in its virtual depiction of Dunedin: planning maps are overlaid over modern

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satellite imagery to effectively illustrate the land reclamation process; 3D buildings are textured with historical photos; and users are able to interact with buildings to call up additional written information where available.

3D models

The 3D shapes automatically extruded from the GIS software form simple, crude models. How do we turn these shapes into complex, detailed models that are both historically accurate and aesthetically pleasing

GIS

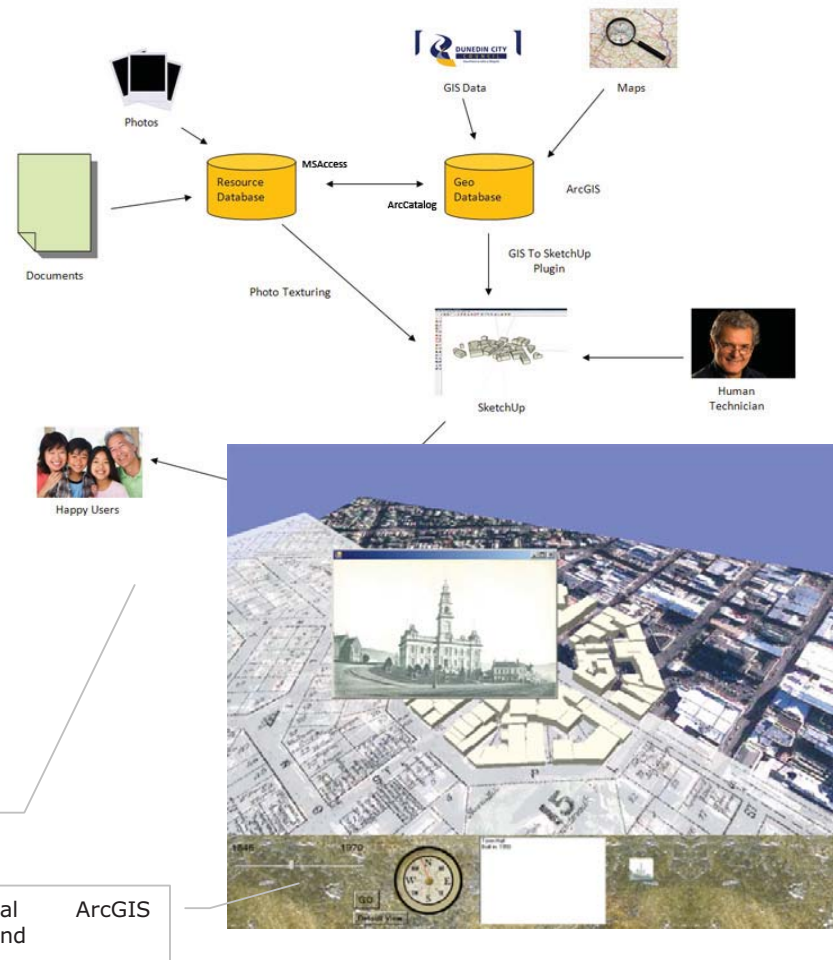
The archival photos and historical town planning maps are all of varying sizes and quality, and are taken from different angles and orientations. How do we use these resources to accurately recreate the town as it once was?

We used spatial manipulation software to georeference historical maps to modern GIS land parcel data. Then, using hi-resolution satellite imagery, we were able to trace present building footprints over archival maps. These footprints can then be automatically extruded to 3D models, perfectly positioned in a global context.

The eHeritage Dunedin software is currently installed on computers at the Dunedin City Council ready for Using 3D modelling software developed by Google, we can quickly add detail to models, and texture them with actual historical photos and paintings to create an authentic environment. The software is also closely tied to Google Earth, which allows users from around the world to 'adopt' a building and refine its detail themselves, thereby creating a 'living heritage' community project.

the next phase of development, looking ahead to its installation at the Otago Settlers Museum in 2012.

Full details of development available at http://bitweb.ict.op.ac.nz/wiki/EHD_Final_Marking_Schedule



eHeritage framework

Spatial/temporal Explorer frontend ArcGIS